

0.a. Goal

Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development

0.b. Target

Target 14.7: By 2030, increase the economic benefits to Small Island Developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture and tourism

0.c. Indicator

Indicator 14.7.1: Sustainable fisheries as a percentage of GDP in small island developing States, least developed countries and all countries

0.d. Series

N/A

0.e. Metadata update

February 2021

0.f. Related indicators

Linkages with other goals and targets: SDG 1, SDG 2, SDG 8 (in particular 8.1 and 8.4), SDG 12, SDG 13, SDG 14 (in particular 14.4.1)

0.g. International organisations(s) responsible for global monitoring

Food and Agriculture Organization of the United Nations (FAO)

1.a. Organisation

Food and Agriculture Organization of the United Nations (FAO)

2.a. Definition and concepts

Definitions:

This indicator expresses the value added of sustainable marine capture fisheries as a proportion of Gross Domestic Product (GDP).

Concepts:

The Gross Domestic Product (GDP) is the value of all final goods and services produced in an economy in a given period, which is equivalent to the sum of the value added (VA) from all sectors in an economy.

The value added of marine capture fisheries measures the value of fish harvested from marine stocks, minus the value of goods and services that are used in the production process (such as raw materials and utilities). It includes activities that are normally integrated into the process of production and occur at sea, such as fishing vessels which process or preserve their catch on board. However, it does not include the processing or preserving of fish when it occurs in land based facilities.

A fish stock is a subset of a species (fish, crustacean, mollusc, etc.) or a population inhabiting a geographical area and participating in the same reproductive process.

Maximum sustainable yield (MSY) is the highest theoretical equilibrium yield that can be continuously taken (on average) from a stock under existing (average) environmental conditions without significantly affecting the reproduction process. A stock fished at (MSY) is referred to as biologically sustainable, as it may remain stable or grow while sustaining losses from fishing and natural sources of mortality.

FAO Fishing Areas for Statistical Purposes are arbitrary areas to facilitate comparison of data, improving the possibilities of cooperation in statistical matters.^[1]

The basic concepts associated with this indicator are part of the following international instruments and classification schemes:

The 1982 United Nations Convention on the Law of the Sea (UNCLOS)^[2]

This instrument is the basis upon which all the subsequent instruments are built. UNCLOS defines the rights and responsibilities of nations concerning their use of the world's oceans, establishing guidelines for businesses, the environment, and the management of marine natural resources. It is a binding instrument, although its principles may also be applied by countries who are not a party to it.

The 1995 FAO Code of Conduct for Responsible Fisheries (CCRF)^[3]

This instrument provides the necessary framework for national and international efforts to ensure sustainable exploitation of aquatic living resources in harmony with the environment by establishing principles and standards applicable to the conservation, management, and development of all fisheries.

The FAO Code of Conduct for Responsible Fisheries relies on the concept of MSY when setting general principles and standards for fisheries management. Article 7.2.1 details how management measures should be “based on the best scientific evidence available” and “designed to maintain or restore stocks at levels capable of producing maximum sustainable yield, as qualified by relevant environmental and economic factors, including the special requirements of developing countries.”

United Nation’s International Standard Classification of All Economic Activities (ISIC) ^[4]

All components of marine capture fisheries are clearly defined within section A 0311 ISIC revision

¹ FAO fishing areas for statistical purposes:

<http://www.fao.org/cwp-on-fishery-statistics/handbook/general-concepts/major-fishing-areas-general/en/> ¹

² UNCLOS: http://www.un.org/Depts/los/convention_agreements/texts/unclos/unclos_e.pdf ¹

³ CCRF: <http://www.fao.org/3/v9878e/V9878E.pdf> ¹

⁴ ISIC revision 4: https://unstats.un.org/unsd/publication/seriesm/seriesm_4rev4e.pdf ¹

2.b. Unit of measure

The indicator measures sustainable fisheries as a percentage of GDP.

2.c. Classifications

The United Nation’s International Standard Classification of All Economic Activities (ISIC) and

FAO Fishing Areas for Statistical Purposes.

3.a. Data sources

The data series on the value added of fisheries and aquaculture and GDP are derived from UNSD National Accounts Official Country Data. In case of missing values, supplementary data is retrieved from OECD Annual National Accounts Database.

Economic data are specifically taken from:

- UNSD National Accounts Official Country Data^[5]
- Table 2.1. Value added by industries at current prices (ISIC Rev. 3)
- Table 2.4. Value added by industries at current prices (ISIC Rev. 4)
- OECD Annual National Accounts^[6]
- Table 6. Value added and its components by activity, ISIC rev3
- Table 6A. Value added and its components by activity, ISIC rev4

The base data from which stock status is modelled and a detailed description of the approach used by FAO is available in:

- FAO Review of the State of World Marine Fishery Resources^[7]
- Tables D 1-D 19. State of exploitation and annual nominal catches.
- SDG 14.4.1 proportion of fish stocks within biologically sustainable levels

⁵ <http://data.un.org/Explorer.aspx> ¹

⁶ <http://stats.oecd.org/> ¹

⁷ <http://www.fao.org/docrep/015/i2389e/i2389e.pdf> ¹

3.b. Data collection method

All data used in the calculation of this indicator is already provided by countries or published by FAO.

National accounts data:

National accounts data is used for both GDP and the value added of fisheries and aquaculture. This data is obtained from UNSD and OECD databases, both available online.

Stock status:

The fish stocks that FAO has monitored since 1974 represent a wide spectrum of data availability, ranging from data-rich and formally assessed stocks to those that have very little information apart from catch statistics by FAO major fishing area and those with no stock assessment at all. For the purposes of using the best available data and information and maintaining consistency among stocks and assessors, a procedure has been defined to identify stock status information (FAO 2011).

FAO collects national data through a questionnaire sent to the Principal Focal Point (PFP) of each country. The PFP organises an institutional set-up which identifies the competent authorities to develop a reference list of stocks and completes the questionnaire. The information or data collected through the questionnaire from a country will initially only inform individual country progress. Depending on the evolution and further standardization of country reporting over the next 3-5 years, national data may be used to inform global/regional estimates.

3.c. Data collection calendar

Data for GDP and value added is retrieved by FAO from UNSD (or the OECD in case of missing values) once a year every February.

FAO compiles stock status information biennially.

3.d. Data release calendar

New data for this indicator is expected to be released biennially in March.

3.e. Data providers

National governmental agencies reporting to:

- Food and Agriculture Organization of the United Nations (FAO).
- United Nations Statistics Division (UNSD).
- The Organization for Economic Cooperation and Development (OECD).

3.f. Data compilers

Food and Agriculture Organization of the United Nations.

3.g. Institutional mandate

FAO is the sole custodian of indicator 14.7.1, as designated by the Inter-agency and Expert Group on Sustainable Development Goal Indicators (IAEG-SDGs).

4.a. Rationale

Although target 14.7 promotes the sustainable use of marine resources “including of fisheries, aquaculture and tourism”, this indicator as selected by the IAEG-SDG focuses only on the sustainable use of marine resources by fisheries. The methodology hereby proposed by FAO thus measures sustainable fisheries as a percentage of GDP, in accordance to the agreed indicator formulation.

The share of value added from an industry in GDP is commonly used as an indication of its economic importance. Accordingly, the value added of marine capture fisheries indicates the prominence of marine fish related activities in the country’s economy and its importance for livelihoods. Both GDP and the VA are measured in constant prices and domestic currency.

Stocks that are fished at sustainable levels are able to support the communities and industries which rely on them, without compromising reproduction and long-term sustainability. By contrast, a stock that is exploited to a point where it cannot replenish itself will ultimately provide sub-optimal long-term economic returns for stakeholders.

The status of a fish stock is evaluated through a various processes of assessment that commonly combines biological and statistical information to assess changes in its abundance in response to fishing, which also enables forecasting of future trends.

FAO has been periodically analysing and compiling the status of marine fish stocks combining the results of formal stock assessments available, including the assessments carried out at the regional level and a finer scale by national institutions and scientific working groups. For stocks that do not have a formal stock assessment, effort is made to collect relevant data and information from the literature, or from local experts, that could be used to infer stock status (for instance trends in catch rates, size frequency distribution of the catch, occasional fishing mortality estimates through surveys, etc.). The information from various sources is analysed and synthesized to classify the exploitation status of fish stocks. FAO monitoring of stocks will be enhanced with the implementation of SDG indicator 14.4.1, which tracks progress towards more fish stocks within biologically sustainable levels at national, regional (across FAO Major Fishing Areas) and global levels.

Based on FAO’s monitoring of stocks at regional and global level, the percentage of fish resources that are within biologically sustainable levels has exhibited a downward trend from 90 percent in 1974 to 67 percent in 2015, while 33 percent are considered to be overexploited. Overexploitation not only has negative ecological consequences, but also reduces long-term fishery yields, which have adverse social and economic effects, particularly for dependent communities in developing countries and Small Island Developing States (SIDS).

4.b. Comment and limitations

The indicator measures the value added of sustainable marine capture fisheries as a proportion of GDP. However, the vast majority of countries report only aggregated data for value added for the fisheries and aquaculture sector. To overcome this problem it is necessary to separate the value added for marine capture fisheries from the aggregated data. Preferably this would be done using the value of marine capture fisheries as a proxy. However, in the absence of value data, the quantity of marine capture fisheries as a proportion of total production is used as a proxy for the proportion of value added.

For marine capture fisheries, despite the expanded coverage of FAO’s assessments in recent years, data deficiencies may lead to uncertainty as to the level of exploitation of a stock. While data limitations exist, the methodology employed by FAO seeks to eliminate discrepancies and provide a representative

assessment of marine fish stocks. The time series for which stock assessment is available starts with the first public release of FAO stock assessment, in 2011 for each FAO Major Fishing area. FAO continues to release this information biennially.^[8]

National fish stock assessments are only available for a few countries, and therefore are not globally or regionally representative. Therefore, the sustainability multiplier used in the compilation of this indicator is based on the average fish stock sustainability calculated by FAO for each Major Fishing Area. For each country, the sustainability multiplier will be the average sustainability weighted by the proportion of the quantity of marine capture for each respective fishing area in which the country performs fishing activities.

Currently, FAO aims to begin compiling country-level estimates for SDG indicator 14.4.1 (proportion of fish stocks within biologically sustainable levels) in 2020. Once these estimates become available, the computation method for the current indicator will use country-level estimates rather than estimates based on FAO Major Fishing Areas to determine the sustainability multiplier and hence estimate the value added of sustainable marine capture fisheries as a proportion of GDP.

⁸ The most recent version of Review of the State of World Marine Fishery Resources which contains stock status is available at <http://www.fao.org/docrep/015/i2389e/i2389e.pdf> :

4.c. Method of computation

The method of computation for 14.7.1 differs depending on the availability of data. Method 1 outlines the steps for calculating 14.7.1 using national sustainability. Method 2 gives the steps for calculating 14.7.1 using proxy regional sustainability data.

Method 1: When national sustainability data is available from 14.4.1, the contribution of sustainable marine capture fisheries to GDP is calculated as follows

1. The percentage contribution of fisheries and aquaculture to GDP is estimated by simply dividing the value added of fisheries and aquaculture by national GDP.

$$\text{GDP from Fisheries and Aquaculture (\%)} = \frac{\text{Value Added Fisheries and Aquaculture}}{\text{GDP}}$$

$$\text{GDP}_{\text{FIA}} = \frac{\text{VA}_{\text{FIA}}}{\text{GDP}}$$

1. In order to disaggregate for the value added of marine capture fisheries and the value added of aquaculture, the quantity of fish produced from marine capture fisheries will be divided by total quantity of national production of fish, and then multiplied by the percentage of GDP from fisheries and aquaculture. As such, the quantity of production of marine capture fisheries is used as a proxy for the value of marine capture fisheries.

$$\text{Value added of marine capture Fisheries proxy (\%)} = \text{GDP from Fisheries and Aquaculture} \times \frac{\text{Quantity of Marine capture Fisheries}}{\text{Total Quantity of Fish}}$$

$$\text{VA}_{\text{F}} = \text{GDP}_{\text{FIA}} \times \frac{Q_{\text{M}}}{Q_{\text{T}}}$$

1. The value added of marine capture fisheries (b) will be adjusted by the sustainability multiplier. The sustainability multiplier is taken from national indicators for SDG 14.4.1, proportion of fish stocks within biologically sustainable levels

Sustainable marine capture Fisheries as a % of GDP = Sustainability multiplier \times Value Added marine Fisheries

$$\text{SuGDP}_{\text{F}} = \text{Sm} \times \text{VA}_{\text{F}}$$

In summary, the computation method for GDP from sustainable marine capture fisheries may also be expressed as:

$$\text{SuGDP}_{\text{F}} = \sum_{i=1}^n S_i \frac{Q_i}{Q_{\text{T}}} \times \left(\frac{Q_{\text{M}}}{Q_{\text{T}}} \times \frac{\text{VA}_{\text{FIA}}}{\text{GDP}} \right)$$

Method 2: When national sustainability data is not available from 14.4.1, the contribution of sustainable marine capture fisheries to GDP is calculated as follows using proxy regional sustainability data.

1. The percentage contribution of fisheries and aquaculture to GDP is estimated by simply dividing the value added of fisheries and aquaculture by national GDP.

$$\text{GDP from Fisheries and Aquaculture (\%)} = \frac{\text{Value Added Fisheries and Aquaculture}}{\text{GDP}}$$

$$\text{GDP}_{\text{FIA}} = \frac{\text{VA}_{\text{FIA}}}{\text{GDP}}$$

1. In order to disaggregate for the value added of marine capture fisheries and the value added of aquaculture, the quantity of fish produced from marine capture fisheries will be divided by total quantity of national production of fish, and then multiplied by the percentage of GDP from fisheries and aquaculture. As such, the quantity of production of marine capture fisheries is used as a proxy for the value of marine capture fisheries.

$$\text{Value added of marine capture Fisheries proxy (\%)} = \text{GDP from Fisheries and Aquaculture} \times \frac{\text{Quantity of Marine capture Fisheries}}{\text{Total Quantity of Fish}}$$

$$\text{VA}_{\text{F}} = \text{GDP}_{\text{FIA}} \times \frac{Q_{\text{M}}}{Q_{\text{T}}}$$

1. The sustainability multiplier will be calculated based on the average sustainability published periodically for each FAO major marine fishing area.

For each country, the sustainability multiplier will be the average sustainability weighted by the proportion of the quantity of marine capture for each respective fishing area in which the country performs fishing activities. When a country fishes in only one FAO fishing area, its sustainability multiplier will be equal to the average sustainability of stocks in that area.

$$\text{Sustainability multiplier} = \text{Sum of} \left(\text{Sustainability for Each region} \times \frac{\text{Quantity fished from Each marine region}}{\text{Total Quantity fished from All marine regions}} \right)$$

$$S_m = \sum_{i=1}^n S_i \times \frac{Q_i}{Q_N}$$

1. The value added of marine capture fisheries (b) will be adjusted by the sustainability multiplier (c) to get the sustainable marine capture fisheries as a percentage of GDP

Sustainable marine capture Fisheries as a % of GDP = Sustainability multiplier \times Value Added marine Fisheries

$$SuGDP_F = S_m \times VA_F$$

In summary, the computation method for GDP from sustainable marine capture fisheries may also be expressed as:

$$SuGDP_F = \sum_{i=1}^n S_i \frac{Q_i}{Q_N} \times \left(\frac{Q_M}{Q_T} \times \frac{VA_{FA}}{GDP} \right)$$

4.d. Validation

The methodology relies on information which is already provided by countries or published by FAO. National statistical systems are the primary providers of data for each aspect of the indicator. Value added and GDP data are collected and validated by the countries themselves. All inputs are reviewed for consistency prior to calculation of the indicator to ensure the consistency of figures and methodologies

4.e. Adjustments

National accounts data is harmonised to ensure that figures for GDP and the value added of fisheries and aquaculture are obtained from the same ISIC review and System of National Accounts (SNA) series.

4.f. Treatment of missing values (i) at country level and (ii) at regional level

- At country level

This indicator examines economic contribution from marine capture fisheries. If a country has no marine capture fisheries then the indicator is not calculated for that country.

No imputation is performed to derive estimates for countries or years when the value added of fisheries and aquaculture is not available.

FAO employs a wide spectrum of data and analysis to assess 500 fish stocks, which accounts for 70–80 percent of global landings. A detailed description of the approach used by FAO is available at the Review of the State of World Marine Fishery Resources.^[9] If national estimates of fish stocks are not available from SDG 14.4.1, then regional stock status will be used.

- At regional and global level

Not applicable. Regional aggregates will only be calculated based on contribution of sustainable fisheries to the GDP of those countries that have reported value added for fishing and aquaculture in a given year.

⁹ The most recent version of Review of the State of World Marine Fishery Resources is available at <http://www.fao.org/docrep/015/i2389e/i2389e.pdf> 1

4.g. Regional aggregations

Regional and global aggregates will be generated by taking the average value of the indicator for countries in each SDG region.

When interpreting regional aggregates, it is important to consider that a country's geographic region is not necessarily indicative of how or where it fishes. Countries may fish in completely different fishing areas from others in their region, and therefore land-based regional aggregates can be inappropriate when dealing with marine resources.

4.h. Methods and guidance available to countries for the compilation of the data at the national level

All data used in the calculation of this indicator is drawn from already available international sources. As such there is no additional reporting burden for countries.

4.i. Quality management

N/A

4.j. Quality assurance

In order to provide continuity of collection of data for value added for fisheries and aquaculture, and GDP across different versions of the Systems of National Accounts (SNA) and ISIC revisions, FAO Fisheries and Aquaculture Department ensures its consistency by the use of backwards and forwards linkages when collecting and validating the information.

While SDG indicator 14.7.1 is completely constructed on data already provided by countries to FAO, to the United Nations Statistics Division (UNSD) and to the Organization for Economic Cooperation and Development (OECD), countries are invited to collaborate with FAO to increase the precision of their results, by providing otherwise unavailable inputs for the calculation of the indicator.

4.k. Quality assessment

The indicator provides a clear framework for monitoring countries' progress towards target 14.7. Inputs are robust, standardised, globally recognised and available for a wide range of countries, including many developing nations. As such there is comprehensive coverage for the majority of countries.

There may be variation in the completeness of nationally reported data. Improvements in data collection by national statistics systems may improve the accuracy of this indicator. When regional stock status is used in the calculation of this indicator it may not fully reflect the sustainability of national fisheries.

5. Data availability and disaggregation

Data availability:

The indicator may be calculated based on currently available data for 128 countries which have marine capture fisheries and have reported the value added of fisheries and aquaculture at least once since 2011. This includes 35 SIDS, 68 developing countries and 23 least developed countries.

Breakdown of country data availability by region, starting in 2011:

	2011	2013	2015	2017	Overall coverage
Global	126	122	111	98	128
Developing	68	67	60	57	68
Least Developed Countries	20	18	18	17	23
SIDS	35	33	30	23	35
Africa	26	25	23	20	29
Northern Africa	2	1	1	1	2
Sub-Saharan Africa	24	24	22	19	27
Eastern Africa	6	7	7	5	7
Middle Africa	6	6	5	4	6
Southern Africa	2	2	2	2	2
Western Africa	10	9	8	8	12
Americas	36	36	31	24	36
Latin America and the Caribbean	32	32	28	23	32
Caribbean	16	16	13	7	16

Latin America	16	16	15	16	16
Northern America	4	4	3	1	4
Asia	22	22	22	21	22
Central Asia	0	0	0	0	0
Eastern Asia	1	1	1	0	1
Southern Asia	6	6	6	6	6
South-Eastern Asia	8	8	8	8	8
Western Asia	7	7	7	7	7
Europe	29	28	26	25	30
Eastern Europe	5	4	4	3	5
Northern Europe	11	11	10	10	11
Southern Europe	9	9	8	8	9
Western Europe	4	4	4	4	4
Oceania	12	10	9	8	12
Australia and New Zealand	1	1	1	1	1
Melanesia	4	2	2	2	4
Micronesia	3	3	3	3	3
Polynesia	4	4	3	2	4

Time Series:

Regional state of the world's marine fish stock: 2011, 2013 and 2015

Value added from UNSD: from 1990 to 2017

Disaggregation:

Currently there are no disaggregation dimensions for this indicator.

6. Comparability/deviation from international standards

Stock status taken from 14.4.1 is estimated by FAO based on the methodologies developed in the 1980s. Although regular updates were carried out to incorporate technical advances and changes in major fish species, some discrepancies between regions may occur in the representativeness of the reference list in practical fisheries. However, this will not pose a large impact on the reliability of the indicator's temporal trends.

7. References and Documentation

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